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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,181	01/11/2002	Nestor A. Bojarczuk JR.	YOR9-2000-0644	5965

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EXAMINER

SMITH, BRADLEY

ART UNIT	PAPER NUMBER
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2824

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/042,181

Applicant(s)

BOJARCZUK ET AL.

Examiner

Bradley K Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 24-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 24-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 24 and 25 are rejected under 35 U.S.C. 102(a) as being anticipated by Chon et al. "Fatigue free samarium-modified bismuth titanate film capacitors having a large spontaneous polarizations". Chon et al. disclose a rare earth based memory element based on a hysteresis and current voltage characteristics (Figure 2). Furthermore Chon et al. disclose the a substrate a metal oxide layer and a conductive layer on the metal oxide layer.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5-8, 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haukka et al. (US Pregrant Publication 2002/0115252) Haukka et al. disclose a gate dielectric with a substrate comprising of a semiconductor material , a

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metal oxide layer comprising an electrically insulating rare earth metal oxide disposed on the surface of the substrate , a conductive material on metal oxide layer and the conductive material acting as a gate electrode (figure 3). However, with respect to claim 1, Huakka fails to disclose that a second electrode is attached to the substrate, and with respect to claim 10, Haukka et al. fails to disclose a second and third electrode attached to the source and drain region respectively. But the examiner takes official notice that since Haukka et al. disclose that this invention is for a transistor, it would be obvious to one of ordinary skill in the art at the time the invention was made, to attach electrodes to the substrate more specifically the source and drain regions, because a solid state transistor by definition has to have a electrodes attached to the source and drain in order to function. Furthermore with respect to claims 2 , 3, 5 and 13, Haukka et al. disclose the dielectric layer comprises a mixture of lanthanum oxide and aluminum oxide. With respect to claims 6 and 7, Haukka et al. disclose the metal oxide layer has a thickness of 30-90 angstroms. With respect to claim 8, Haukka et al. disclose the conductive material comprises polysilicon.

3. Claims 4, 9, 14, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haukka et al. (US Pregrant Publication 2002/0115252). Haukka et al. disclose the claimed invention except for the conductive material is aluminum. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use aluminum as the conductive material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its

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suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

4. Claims 11, 12, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haukka et al. (US Pregrant Publication 2002/0115252). Haukka et al. disclose the claimed invention except for the substrate being n-doped silicon. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use n-doped silicon, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

3. Claims 31-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haukka et al. (US Pregrant Publication 2002/0115252) in view of Chon et al. Haukka et al. disclose a gate dielectric with a substrate comprising of a semiconductor material , a metal oxide layer comprising an electrically insulating rare earth metal oxide disposed on the surface of the substrate , a conductive material on metal oxide layer and the conductive material acting as a gate electrode. However Haukka et al. fails to disclose an active element that changes with respect to applied voltage, resulting in a current voltage profile, and the charging and discharging of the metal oxide to form the current voltage profile (hysteresis curve). Whereas Chon et al. disclose a rare earth based memory element that has a hysteresis curve (active element that changes with respect to applied voltage, resulting in a current voltage profile, and the charging and discharging of the metal oxide layer) (see figure 2). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine

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the teachings of Haukka et al. and Chon et al., because the use of hysteresis curves in memory applications is very well known in the art.

***Response to Arguments***

4. Applicant's arguments, see paper 12, filed 9/3/02, with respect to the rejection(s) of claim(s) 1-14 and 24-30 under Yu et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Haukka et al. and Chon et al.

RT  
10/20/03

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***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley K Smith whose telephone number is (703) 308-6261. The examiner can normally be reached on 10-6 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (703) 308-2816. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

BKS



**RICHARD ELMS**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**